Maunalua Bay Moon & Tide Calendar 2014

Fish Spawning Guide To Support Sustainable Fishing Practices

got gonads?

NOAA

National Marine Sanctuaries
Hawaiian Islands Humpback Whale

mālama maunalua

CONSERVATION INTERNATIONAL

Department of Land and Natural Resources
State of Hawaii

Photo: Brian Neilson

Aloha mai!

This calendar was developed through a partnership between the University of Hawai‘i Mānoa Fisheries Ecology Research Lab, Conservation International’s Hawaii Fish Trust, Hawaiian Islands Humpback Whale National Marine Sanctuary, Mālama Maunalua, and the Maunalua community to raise awareness on the makai and mauka connections and to share important pono (sustainable and respectful) fishing practices for the area. Traditional Hawaiian knowledge utilized the lunar, seasonal, and tidal cycles to predict the timing of spawning of reef fishes and other critical times when protection was needed. Today, we are relearning the spawning seasons and other important cycles of our reef fishes. We are working towards a community awareness of the natural environmental cycles in the bay and how our valuable resources are impacted by our activities during these cycles.

Closed Season

Closed seasons refer to the current seasonal regulations administered by the State of Hawaii through the Department of Land and Natural Resources. Rules can be found at:http://hawaii.gov/dlnr/dar/rules/ch95.pdf

Limited Harvest

Additional restrictions on harvest are administered by the State of Hawaii. These restrictions regulate gear (nets, spear, etc), number and size of fish, or total weight.

Terms Used In The Calendar

The intent of this calendar is not to impose fishing regulations but rather to highlight the seasonal spawning cycles and suggest minimum sizes that should be harvested to ensure that fish will be available in the future. These recommended pono harvest practices are summarized each month under Suggested Limited Harvest. In each month the State seasonal fishing regulations are summarized with additional information available at the DAR website: http://hawaii.gov/dlnr/dar/index/html.

Suggested Limited Harvest

Limited harvest or no harvest is recommended during these periods to protect spawning of fishes in Maunalua Bay. These periods are based upon fisherman observations, local knowledge, and gonad data from Maunalua Bay.

The bar below will appear for every month, and it displays both the Hawaiian months (Malo) and Gregorian months. The Hawaiian months coincide with the 30 phases of the moon. Each month begins with the moon phase named Hilo (new moon) and finishes with Mauli or Muku. The Gregorian months are the standard months that are most widely accepted and used internationally.

January	February	March	April	May	June	July	August	September	October	November	December
Jan. 1 - Jan. 30	*Jan. 31 - Feb. 27*	*Feb. 28 - Mar. 29*									
Nana	Welo	Ikiiki	Ka‘aona	Hinaiā‘ele‘ele	Māhoe Mua	Māhoe Hope	‘Ikuwa	Welehu	Makali‘i	Kā‘elo	Kaulua

Data Presented in this Calendar

Daily tide and moon data are provided in this calendar.
All predictions are for Maunalua Bay.

Hawaiian Moon Phases

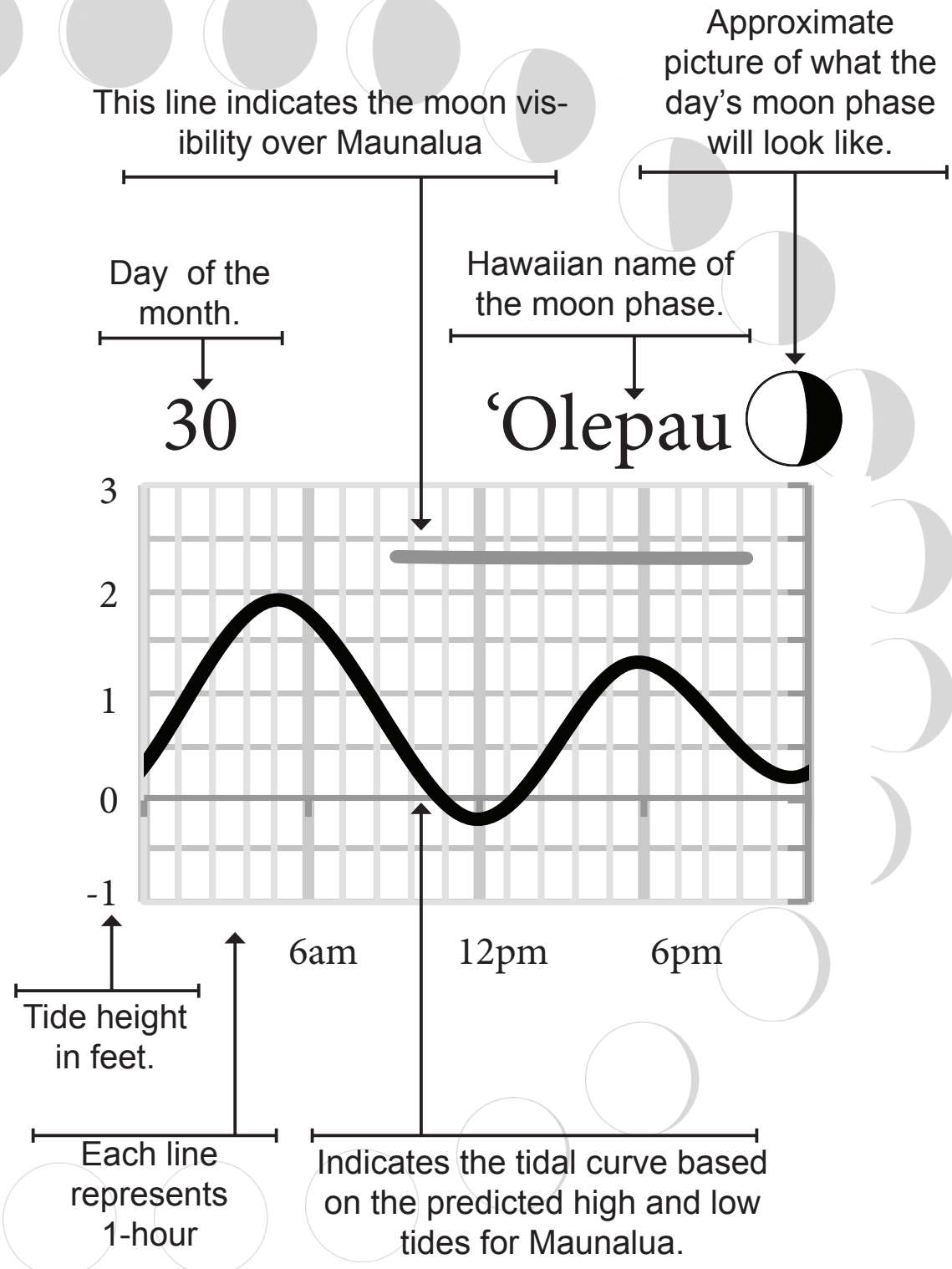
Many calendars today are based upon the synodic month, which is the average orbital period of the moon. A synodic month is 29.53 days. However, there are 30 moon phases. In this calendar, the moon phase Hilo was aligned with the astronomical new moon according to the US Naval Observatory[1]. The days and times are based on Universal Time which was converted to Hawai'i Standard Time for this calendar. The rest of the moon phases are laid out accordingly. Each moon phase has its own name (Malo). The moon phase Muku is omitted for months where the next new moon occurs 29 days after the current months' new moon.

Moon Visibility

The visibility of the moon over Maunalua Bay[2] is provided by the U.S. Naval Observatory website. The rise and set times of each moon phase are represented by the beginning and the end of each bar.

Maunalua Tide

The tides presented in this calendar are the subordinate tide predictions for Maunalua Bay[3], these predictions are based on the harmonic predictions for Hanauma Bay. Harmonic predictions are based on data from stations at the site while subordinate predictions are adjusted times based on data from a nearby data station.



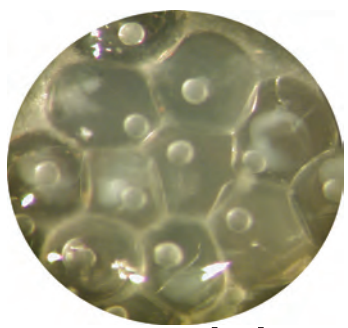
[1]http://aa.usno.navy.mil/cgi-bin/aa_moonphases.pl?year=2013&ZZZ=END
[2]http://aa.usno.navy.mil/data/docs/RS_OneYear.php
[3]http://tidesandcurrents.noaa.gov/

Monitoring Spawning Seasons

We work with local fisherman to identify peak spawning times of reef fishes. We collect gonads (eggs or sperm) from harvested reef fishes and analyze the gonads at UH Mānoa. We look at the egg size, development stage, and hormone levels to determine when spawning is occurring and correlate these spawning events to seasonal and lunar cycles.

LOCAL KNOWLEDGE & SEASONAL OBSERVATIONS

IDENTIFY EGG SIZE & STAGE



GONAD COLLECTION

Closed Season

ʻAmaʻama (Mullet)

Limited Harvest

Moi (15 per day)

Suggested Limited Harvest

Āholehole

ʻŌʻio

Want to participate?

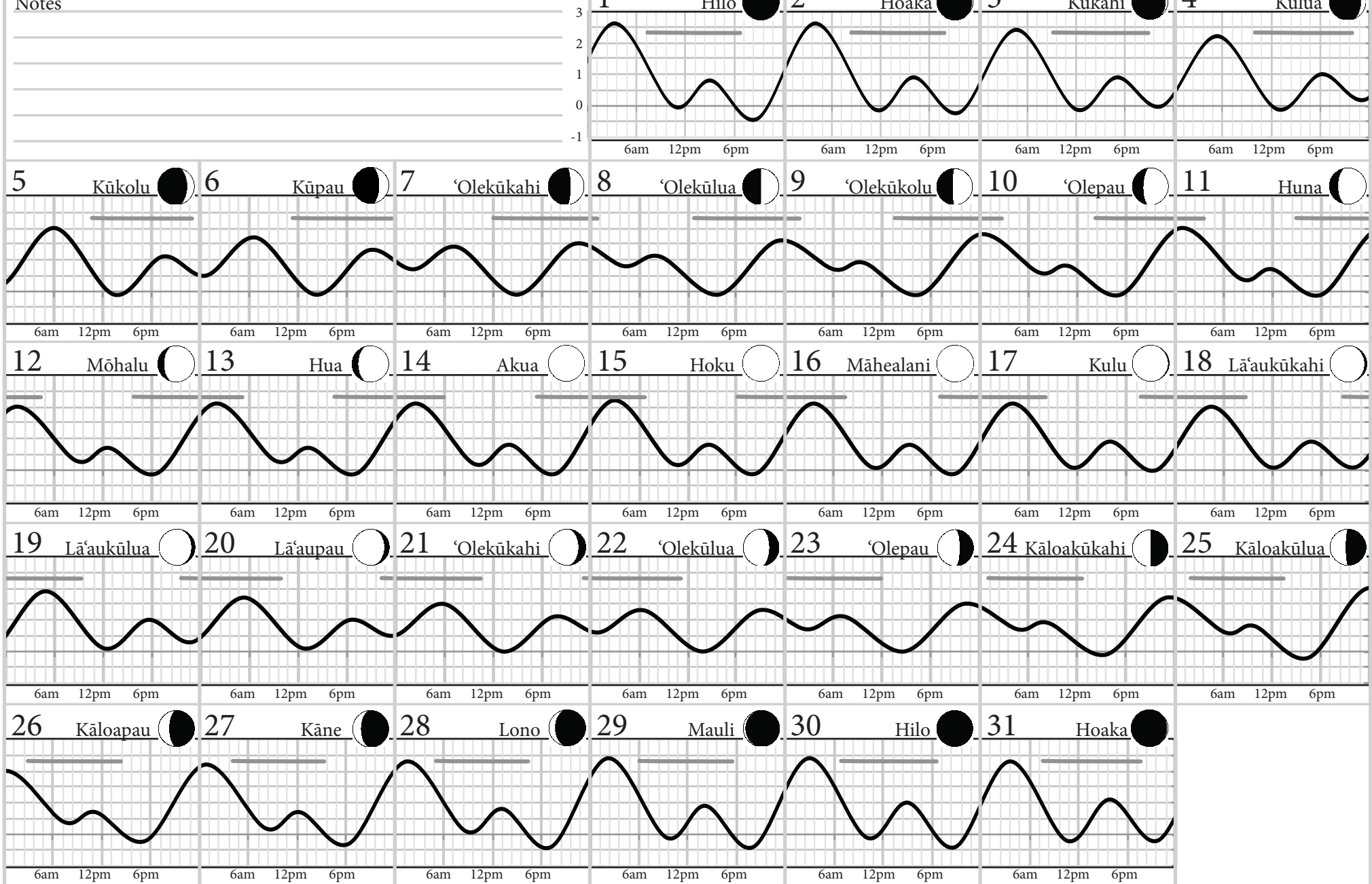
Spawning Season Logbooks are available at Mālama Maunalua in the Hawaii Kai shopping center or contact spawningseasons@gmail.com.

January	February	March	April	May	June	July	August	September	October	November	December
Jan. 1 - Jan. 30	*Jan. 31 - Feb. 27*										
Nana	Welo	Ikiiki	Kaʻaona	Hinaiāʻeleʻele	Māhoe Mua	Māhoe Hope	ʻIkuwa	Welehu	Makaliʻi	Kāʻelo	Kaulua

Nana

January

Lāpule *Sunday*	Pōʻakahi *Monday*	Pōʻalua *Tuesday*	Pōʻakolu *Wednesday*	Pōʻahā *Thursday*	Pōʻalima *Friday*	Pōʻaono *Saturday*
Notes			1 Hilo	2 Hoaka	3 Kūkahi	4 Kūlua
5 Kūkolu	6 Kūpau	7 ʻOlekūkahi	8 ʻOlekūlua	9 ʻOlekūkolu	10 ʻOlepau	11 Huna
12 Mōhalu	13 Hua	14 Akua	15 Hoku	16 Māhealani	17 Kulu	18 Lāʻaukūkahi
19 Lāʻaukūlua	20 Lāʻaupau	21 ʻOlekūkahi	22 ʻOlekūlua	23 ʻOlepau	24 Kāloakūkahi	25 Kāloakūlua
26 Kāloapau	27 Kāne	28 Lono	29 Mauli	30 Hilo	31 Hoaka	



Harvest Wisely To Ensure Future Catches!

Peak spawning of kole occurs from February thru May in Maunalua Bay. Kole are reproductively active around 4.5-5 inches (12-13cm). Avoid harvesting kole smaller than the reproductive size to allow them to contribute to future catches.

Photo: Luka Mossman

Closed Season

ʻAmaʻama (Mullet)

Limited Harvest

Moi (15 per day)

Suggested Limited Harvest

Āholehole

Manini

ʻŌʻio

Kole

January	February	March	April	May	June	July	August	September	October	November	December
	Jan. 31 - Feb. 27	*Feb. 28 - Mar. 29*									
Nana	Welo	Ikiiki	Kaʻaona	Hinaiāʻeleʻele	Māhoe Mua	Māhoe Hope	ʻIkuwa	Welehu	Makaliʻi	Kāʻelo	Kaulua

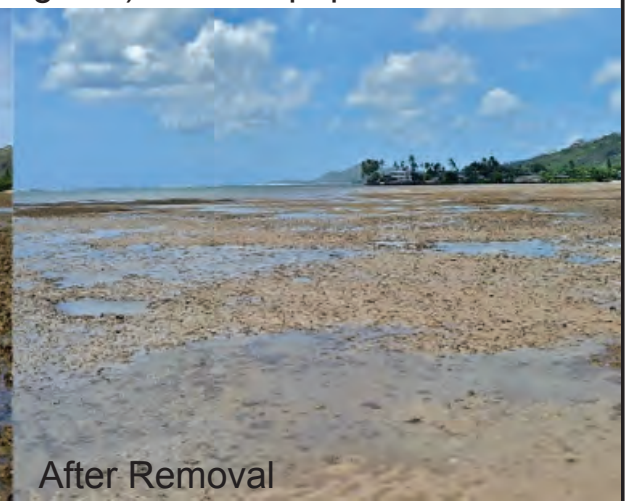
Welo

February

Lāpule *Sunday*	Pōʻakahi *Monday*	Pōʻalua *Tuesday*	Pōʻakolu *Wednesday*	Pōʻahā *Thursday*	Pōʻalima *Friday*	Pōʻaono *Saturday*
Notes						1 Kūkahi
2 Kūlua	3 Kūkolu	4 Kūpau	5 ʻOlekūkahi	6 ʻOlekūlua	7 ʻOlekūkolu	8 ʻOlepau
9 Huna	10 Mōhalu	11 Hua	12 Akua	13 Hoku	14 Māhealani	15 Kulu
16 Lāʻaukūkahi	17 Lāʻaukūlua	18 Lāʻaupau	19 ʻOlekūkahi	20 ʻOlekūlua	21 ʻOlepau	22 Kāloakūkahi
23 Kāloakūlua	24 Kāloapau	25 Kāne	26 Lono	27 Mauli	28 Hilo	

Help Huki to Restore the Bay!

➢Invasive alien algae (IAA) (e.g., Acanthophora spicifera, Avrainvillea amadelpha) smother the nearshore reef flat and hinder the growth of native marine plants (e.g., Nenue sea grass) and fish populations.



➢As a community, we can control the growth and the spread of IAA in Maunalua Bay by removing it by hand. To date, community volunteers have manually removed over 3 million pounds of IAA from Paiko Beach. The pulled IAA is then disposed of locally at Otsuji Farms, where it is used as fertilizer.

➢How to get involved…
Go to Mālama Maunalua's website www.malamamaunalua.org and sign up for the monthly newsletter. The newsletter will give you dates for the 4 community events Mālama Maunalua hosts every month, and are all open to the public.

Closed Season

ʻAmaʻama (Mullet)

Limited Harvest

Moi (15 per day)

Suggested Limited Harvest

Āholehole

Manini

ʻŌʻio

Kole

January	February	March	April	May	June	July	August	September	October	November	December
		Feb. 28 - Mar. 29	*Mar. 30 - Apr. 27*								
Nana	Welo	Ikiiki	Kaʻaona	Hinaiāʻeleʻele	Māhoe Mua	Māhoe Hope	ʻIkuwa	Welehu	Makaliʻi	Kāʻelo	Kaulua

Ikiiki

March

Lāpule *Sunday*	Pōʻakahi *Monday*	Pōʻalua *Tuesday*	Pōʻakolu *Wednesday*	Pōʻahā *Thursday*	Pōʻalima *Friday*	Pōʻaono *Saturday*
Notes						1 Hoaka
2 Kūkahi	3 Kūlua	4 Kūkolu	5 Kūpau	6 ʻOlekūkahi	7 ʻOlekūlua	8 ʻOlekūkolu
9 ʻOlepau	10 Huna	11 Mōhalu	12 Hua	13 Akua	14 Hoku	15 Māhealani
16 Kulu	17 Lāʻaukūkahi	18 Lāʻaukūlua	19 Lāʻaupau	20 ʻOlekūkahi	21 ʻOlekūlua	22 ʻOlepau
23 Kāloakūkahi	24 Kāloakūlua	25 Kāloapau	26 Kāne	27 Lono	28 Mauli	29 Muku

Look Carefully! There are 2 species of ʻŌʻio!

ROUND JAW (Albula glossodonta) -abundant on reef flats

SHARP JAW (Albula virgata) - adundant in deeper channels & bays

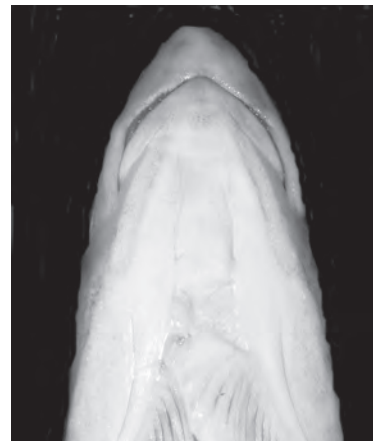


Photo: Eva Schemmel

Limited Harvest

Moi (15 per day)

Suggested Limited Harvest

Āholehole

Manini

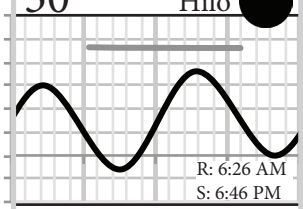
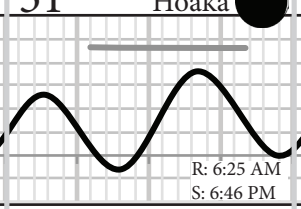
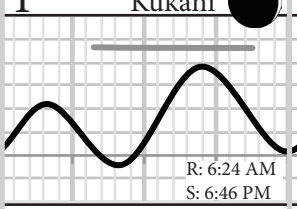
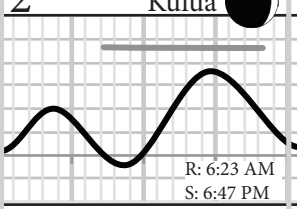
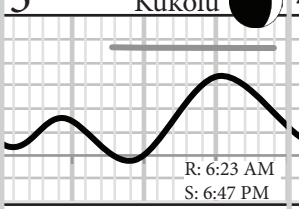
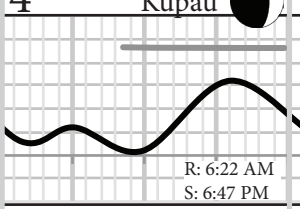
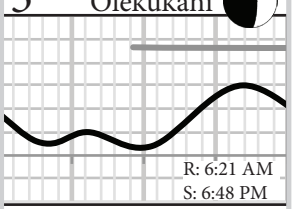
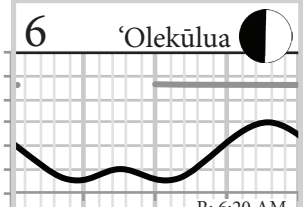
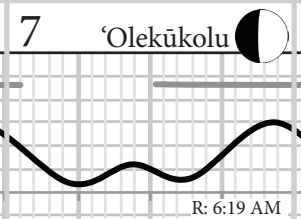
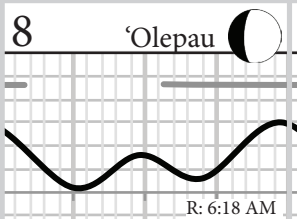
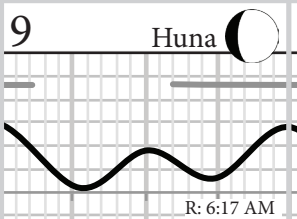
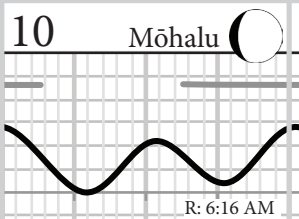
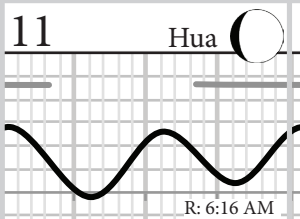
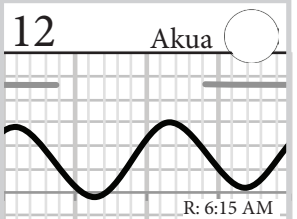
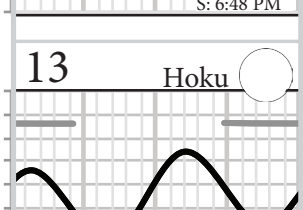
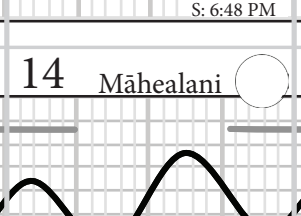
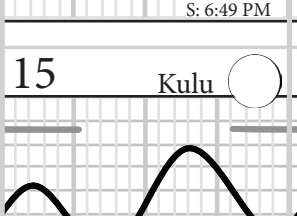
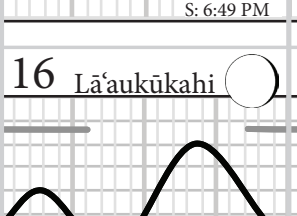
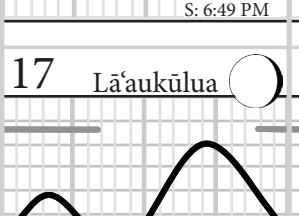
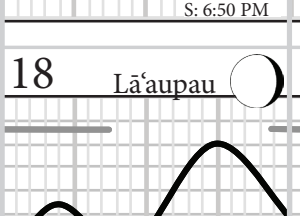
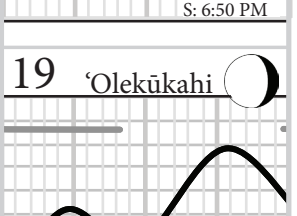
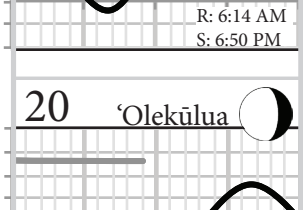
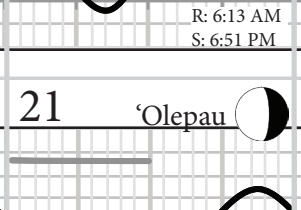
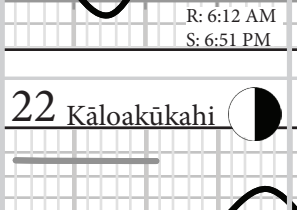
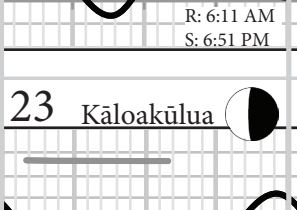
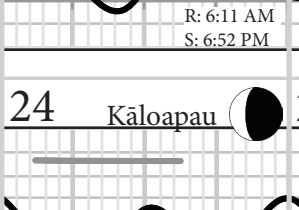
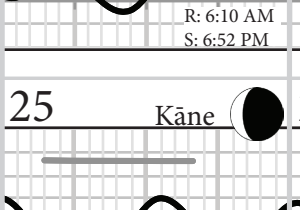
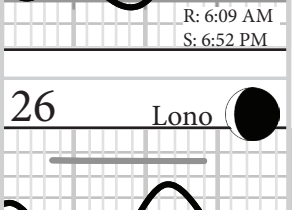
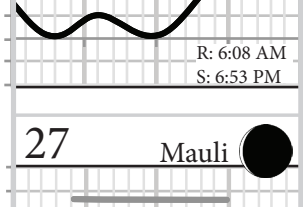
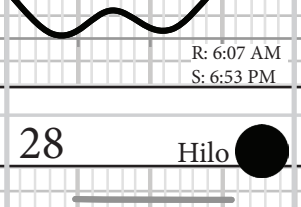
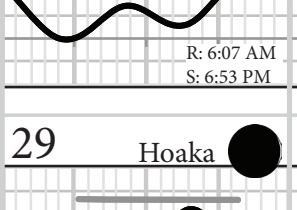
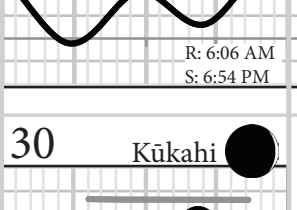
ʻŌʻio

Kole

January	February	March	April	May	June	July	August	September	October	November	December
			Mar. 30 - Apr. 27	*Apr. 28 - May 27*							
Nana	Welo	Ikiiki	Kaʻaona	Hinaiāʻeleʻele	Māhoe Mua	Māhoe Hope	ʻIkuwa	Welehu	Makaliʻi	Kāʻelo	Kaulua

Kaʻaona

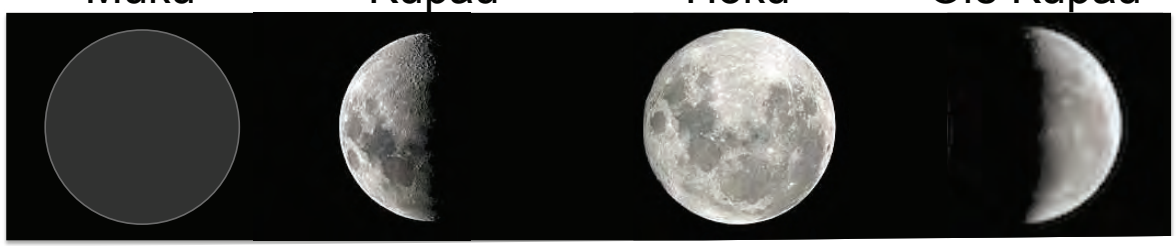
April

Lāpule *Sunday*	Pōʻakahi *Monday*	Pōʻalua *Tuesday*	Pōʻakolu *Wednesday*	Pōʻahā *Thursday*	Pōʻalima *Friday*	Pōʻaono *Saturday*
30 Hilo	31 Hoaka	1 Kūkahi	2 Kūlua	3 Kūkolu	4 Kūpau	5 ʻOlekūkahi
 R: 6:26 AM S: 6:46 PM	 R: 6:25 AM S: 6:46 PM	 R: 6:24 AM S: 6:46 PM	 R: 6:23 AM S: 6:47 PM	 R: 6:23 AM S: 6:47 PM	 R: 6:22 AM S: 6:47 PM	 R: 6:21 AM S: 6:48 PM
6 ʻOlekūlua	7 ʻOlekūkolu	8 ʻOlepau	9 Huna	10 Mōhalu	11 Hua	12 Akua
 R: 6:20 AM S: 6:48 PM	 R: 6:19 AM S: 6:48 PM	 R: 6:18 AM S: 6:49 PM	 R: 6:17 AM S: 6:49 PM	 R: 6:16 AM S: 6:49 PM	 R: 6:16 AM S: 6:50 PM	 R: 6:15 AM S: 6:50 PM
13 Hoku	14 Māhealani	15 Kulu	16 Lāʻaukūkahi	17 Lāʻaukūlua	18 Lāʻaupau	19 ʻOlekūkahi
 R: 6:14 AM S: 6:50 PM	 R: 6:13 AM S: 6:51 PM	 R: 6:12 AM S: 6:51 PM	 R: 6:11 AM S: 6:51 PM	 R: 6:11 AM S: 6:52 PM	 R: 6:10 AM S: 6:52 PM	 R: 6:09 AM S: 6:52 PM
20 ʻOlekūlua	21 ʻOlepau	22 Kāloakūkahi	23 Kāloakūlua	24 Kāloapau	25 Kāne	26 Lono
 R: 6:08 AM S: 6:53 PM	 R: 6:07 AM S: 6:53 PM	 R: 6:07 AM S: 6:53 PM	 R: 6:06 AM S: 6:54 PM	 R: 6:05 AM S: 6:54 PM	 R: 6:04 AM S: 6:54 PM	 R: 6:04 AM S: 6:55 PM
27 Mauli	28 Hilo	29 Hoaka	30 Kūkahi			
 R: 6:03 AM S: 6:55 PM	 R: 6:02 AM S: 6:56 PM	 R: 6:02 AM S: 6:56 PM	 R: 6:01 AM S: 6:56 PM			

Notes

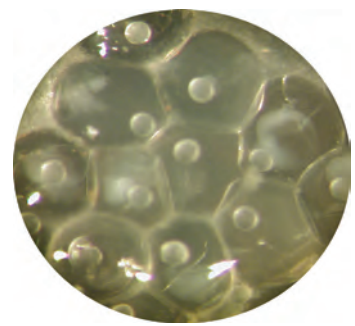
Harvest Wisely To Ensure Future Catches!

During peak spawning season, manini spawn around the new (Muku) and the full (Hoku) moons. Manini graze on algae on the reef helping to keep the balance between coral and algae. It is important to maintain large herbivore populations to ensure that coral does not get smothered with algae.



SPAWNING MANINI

Spawning Female Full of Eggs

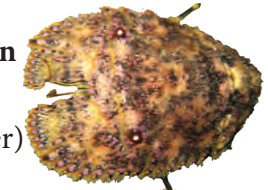


Microscope Picture of Eggs During Spawning

Photo: Eva Schemmel

Closed Season

Ula Papapa (slipper lobster)



Ula (spiny lobster)

Kona crab

Limited Harvest

Moi (15 per day)

Suggested Limited Harvest

Manini

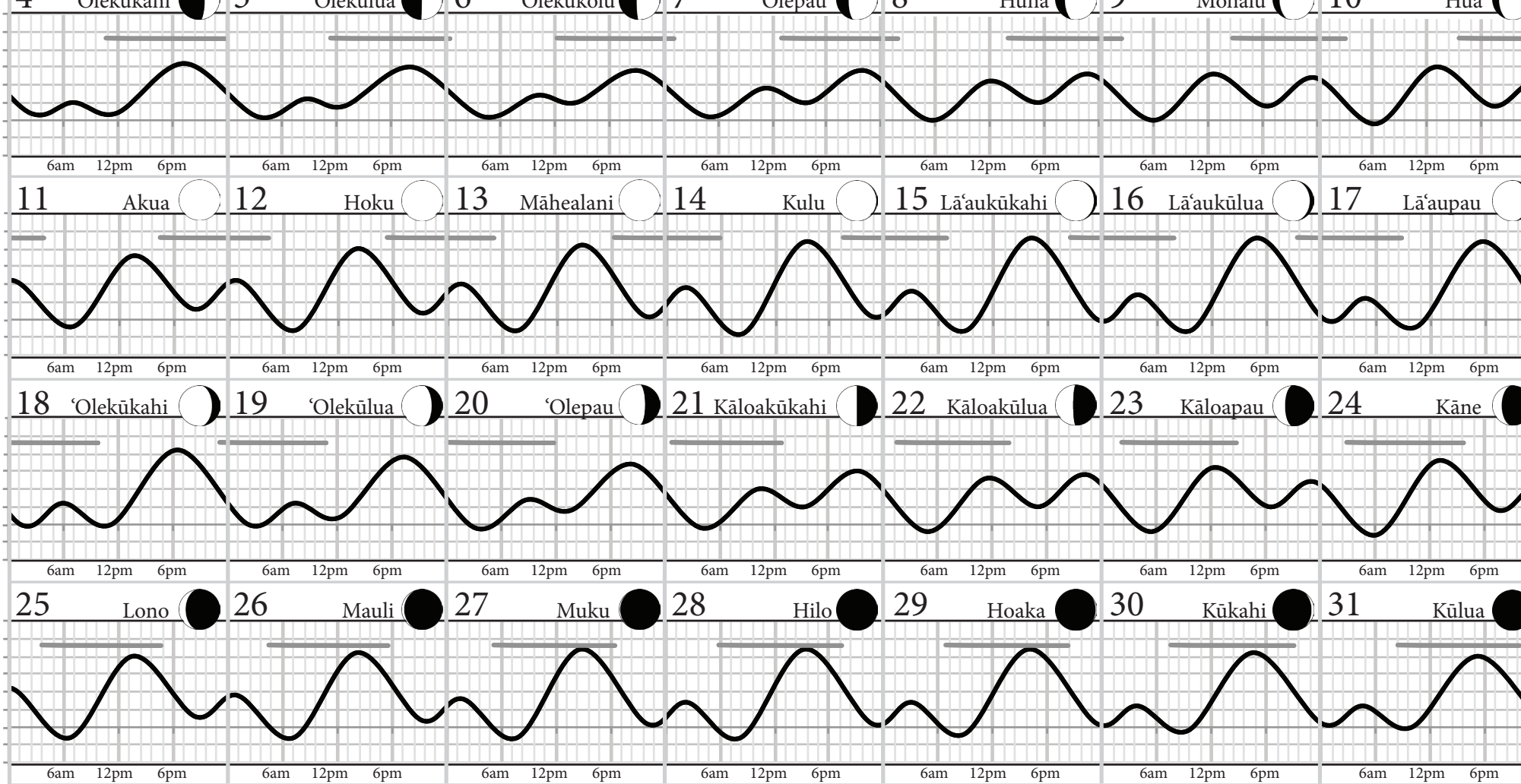
Kole

January	February	March	April	May	June	July	August	September	October	November	December
				Apr. 28 - May 27	*May 28- Jun. 25*						
Nana	Welo	Ikiiki	Ka‘aona	Hinaiā‘ele‘ele	Māhoe Mua	Māhoe Hope	‘Ikuwa	Welehu	Makali‘i	Kā‘elo	Kaulua

Hināiaʻeleʻele

May

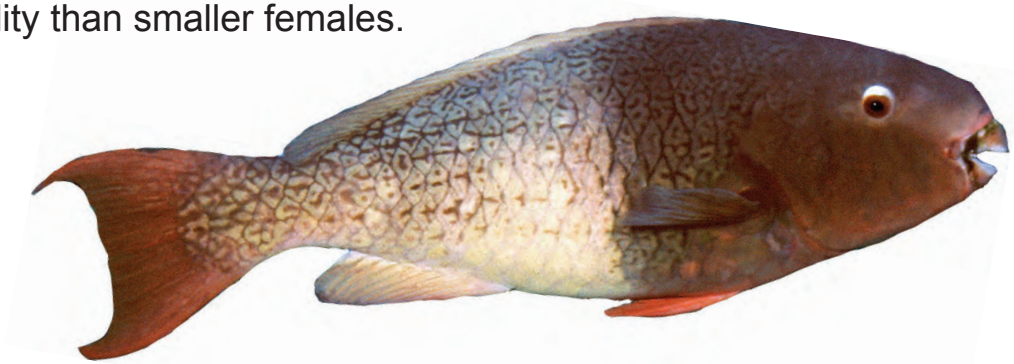
Lāpule *Sunday*	Pōʻakahi *Monday*	Pōʻalua *Tuesday*	Pōʻakolu *Wednesday*	Pōʻahā *Thursday*	Pōʻalima *Friday*	Pōʻaono *Saturday*
Notes				1 Kūlua	2 Kūkolu	3 Kūpau
4 ʻOlekūkahi	5 ʻOlekūlua	6 ʻOlekūkolu	7 ʻOlepau	8 Huna	9 Mōhalu	10 Hua
11 Akua	12 Hoku	13 Māhealani	14 Kulu	15 Lāʻaukūkahi	16 Lāʻaukūlua	17 Lāʻaupau
18 ʻOlekūkahi	19 ʻOlekūlua	20 ʻOlepau	21 Kāloakūkahi	22 Kāloakūlua	23 Kāloapau	24 Kāne
25 Lono	26 Mauli	27 Muku	28 Hilo	29 Hoaka	30 Kūkahi	31 Kūlua



Uhu Pono Harvest

Leave the blue to ensure future catches. Uhu are hermaphroditic and once they change sex to male and turn color to blue they are necessary for spawning to take place.

Leave larger females as they spawn many, many more eggs of higher quality than smaller females.



Medium females are the best to take, but remember if there are not any large females left in the area, then these medium sized fish are necessary for rebuilding the population.

Photo: Keoki Stender

Closed Season

Ula Papapa (slipper lobster)

Ula (spiny lobster)

Kona crab

Limited Harvest

Moi (15 per day)

Suggested Limited Harvest

Manini

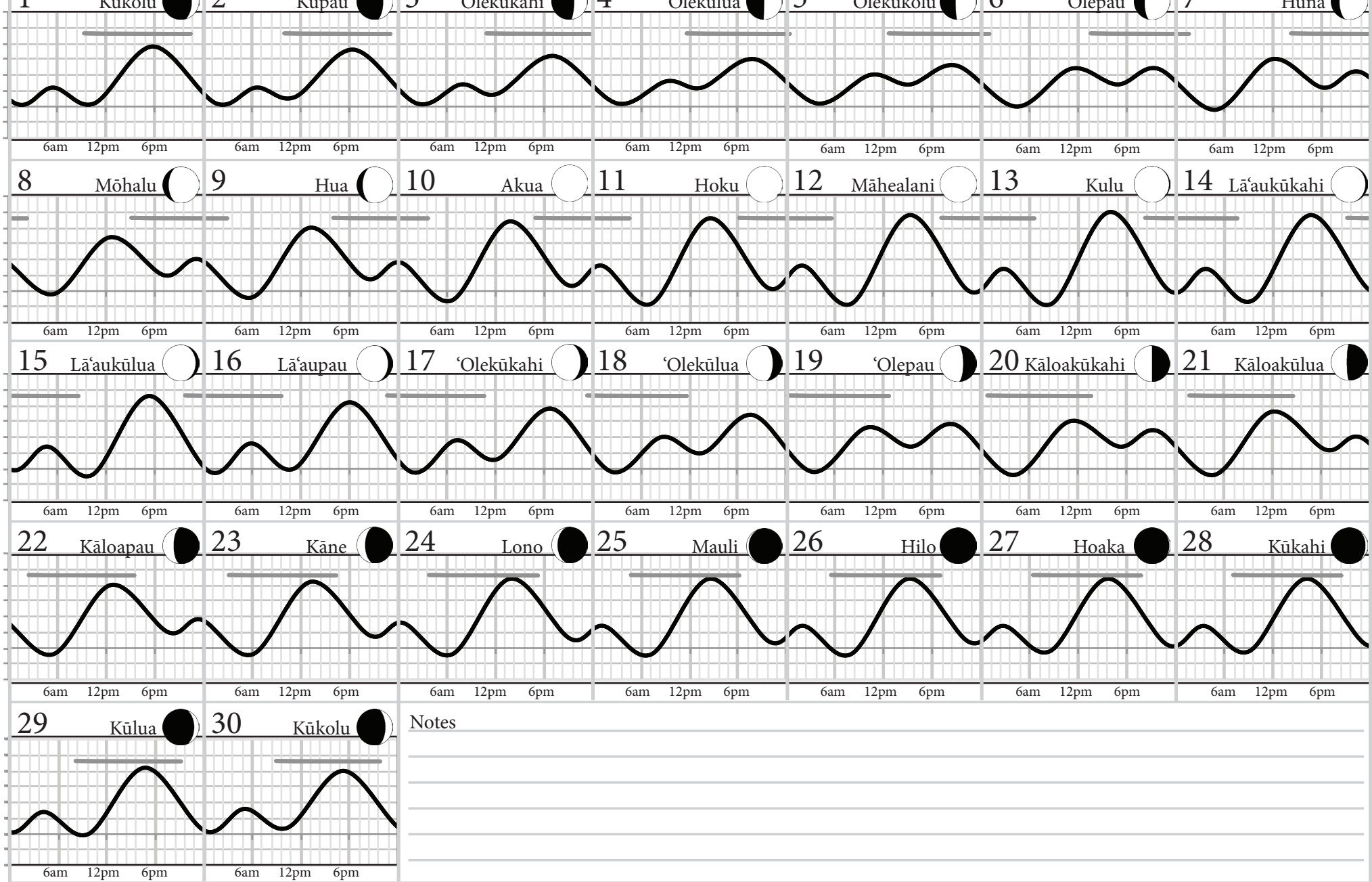
Kole

January	February	March	April	May	June	July	August	September	October	November	December
					May 28- Jun. 25	*Jun. 26- Jul. 25*					
Nana	Welo	Ikiiki	Kaʻaona	Hinaiāʻeleʻele	Māhoe Mua	Māhoe Hope	ʻIkuwa	Welehu	Makaliʻi	Kāʻelo	Kaulua

Māhoe Mua

June

Lāpule *Sunday*	Pōʻakahi *Monday*	Pōʻalua *Tuesday*	Pōʻakolu *Wednesday*	Pōʻahā *Thursday*	Pōʻalima *Friday*	Pōʻaono *Saturday*
1 Kūkolu	2 Kūpau	3 ʻOlekūkahi	4 ʻOlekūlua	5 ʻOlekūkolu	6 ʻOlepau	7 Huna
8 Mōhalu	9 Hua	10 Akua	11 Hoku	12 Māhealani	13 Kulu	14 Lāʻaukūkahi
15 Lāʻaukūlua	16 Lāʻaupau	17 ʻOlekūkahi	18 ʻOlekūlua	19 ʻOlepau	20 Kāloakūkahi	21 Kāloakūlua
22 Kāloapau	23 Kāne	24 Lono	25 Mauli	26 Hilo	27 Hoaka	28 Kūkahi
29 Kūlua	30 Kūkolu					



Notes

Catching Medium Sized Fish Ensures Future Catches!

Papa Ulua spawns in the late summer with peak spawning in July and August. Leaving the large, super females gives the population the best chance of increasing in number.

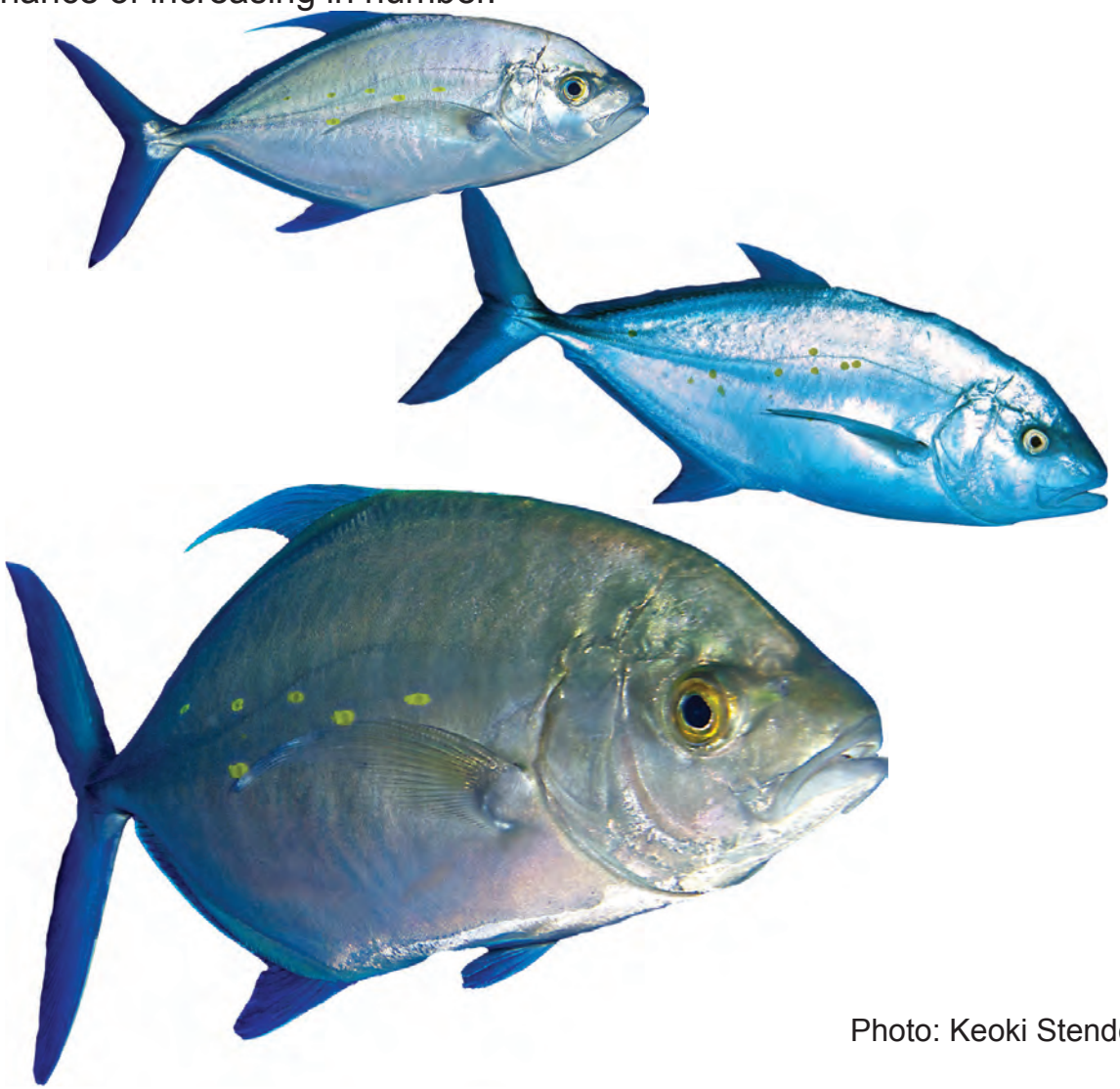
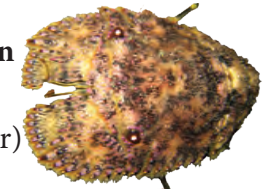


Photo: Keoki Stender

Closed Season

Ula Papapa (slipper lobster)



Ula (spiny lobster)

Kona crab

Moi

Limited Harvest

Halalū

Suggested Limited Harvest

Manini

Papa Ulua

January	February	March	April	May	June	July	August	September	October	November	December
						Jun. 26- Jul. 25	*Jul. 26 - Aug. 24*				
Nana	Welo	Ikiiki	Kaʻaona	Hinaiāʻeleʻele	Māhoe Mua	Māhoe Hope	ʻIkuwa	Welehu	Makaliʻi	Kāʻelo	Kaulua

Māhoe Hope

July

Lāpule *Sunday*	Pōʻakahi *Monday*	Pōʻalua *Tuesday*	Pōʻakolu *Wednesday*	Pōʻahā *Thursday*	Pōʻalima *Friday*	Pōʻaono *Saturday*
Notes		1 Kūpau	2 ʻOlekūkahi	3 ʻOlekūlua	4 ʻOlekūkolu	5 ʻOlepau
6 Huna	7 Mōhalu	8 Hua	9 Akua	10 Hoku	11 Māhealani	12 Kulu
13 Lāʻaukūkahi	14 Lāʻaukūlua	15 Lāʻaupau	16 ʻOlekūkahi	17 ʻOlekūlua	18 ʻOlepau	19 Kāloakūkahi
20 Kāloakūlua	21 Kāloapau	22 Kāne	23 Lono	24 Mauli	25 Muku	26 Hilo
					Notes	

Harvest Wisely To Ensure Future Catches!

U‘u have a short spawning season from July through September. This means that they are particularly vulnerable to harvesting during this time. The eggs are bright orange and look almost clear when they are about to be spawned.

Female u‘u ready to spawn.

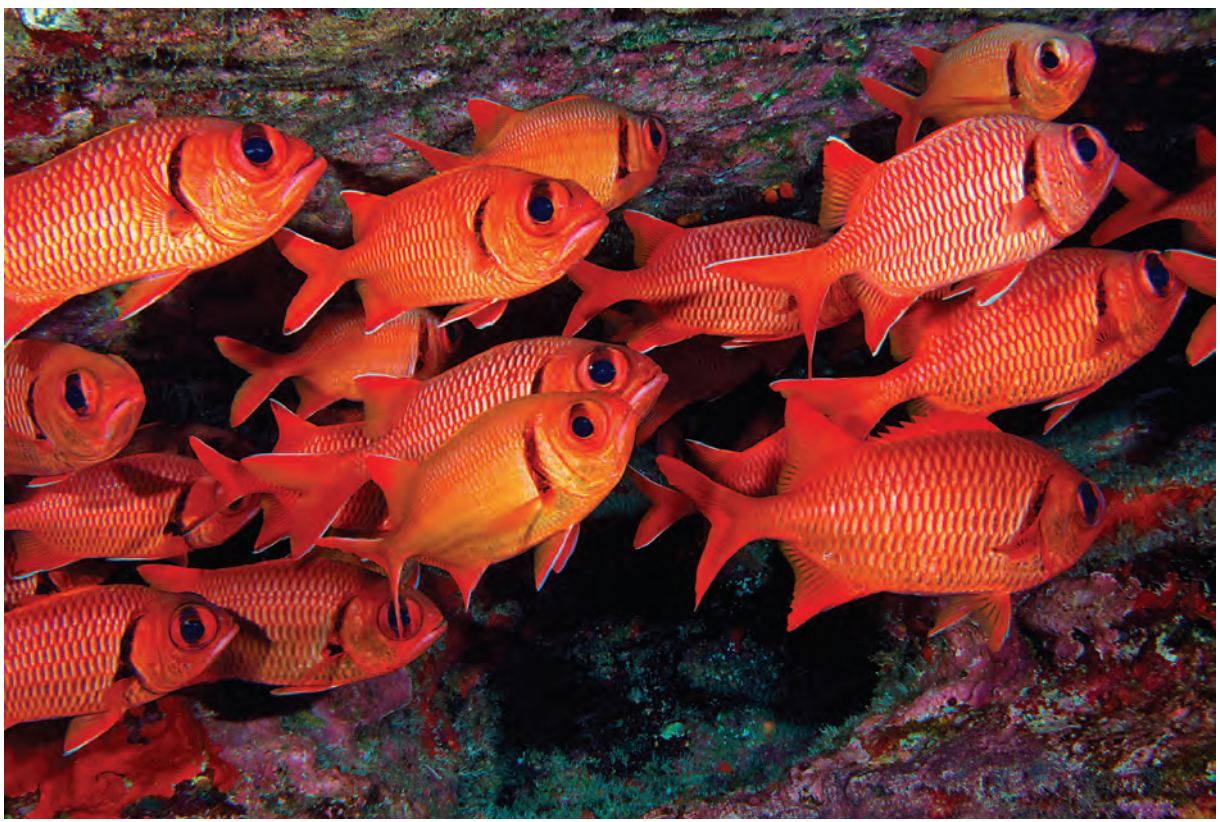


Photo: Keoki Stender

Closed Season

Ula Papapa (slipper lobster)

Ula (spiny lobster)

Kona crab

Moi

Limited Harvest

Halalū

Suggested Limited Harvest

U‘u

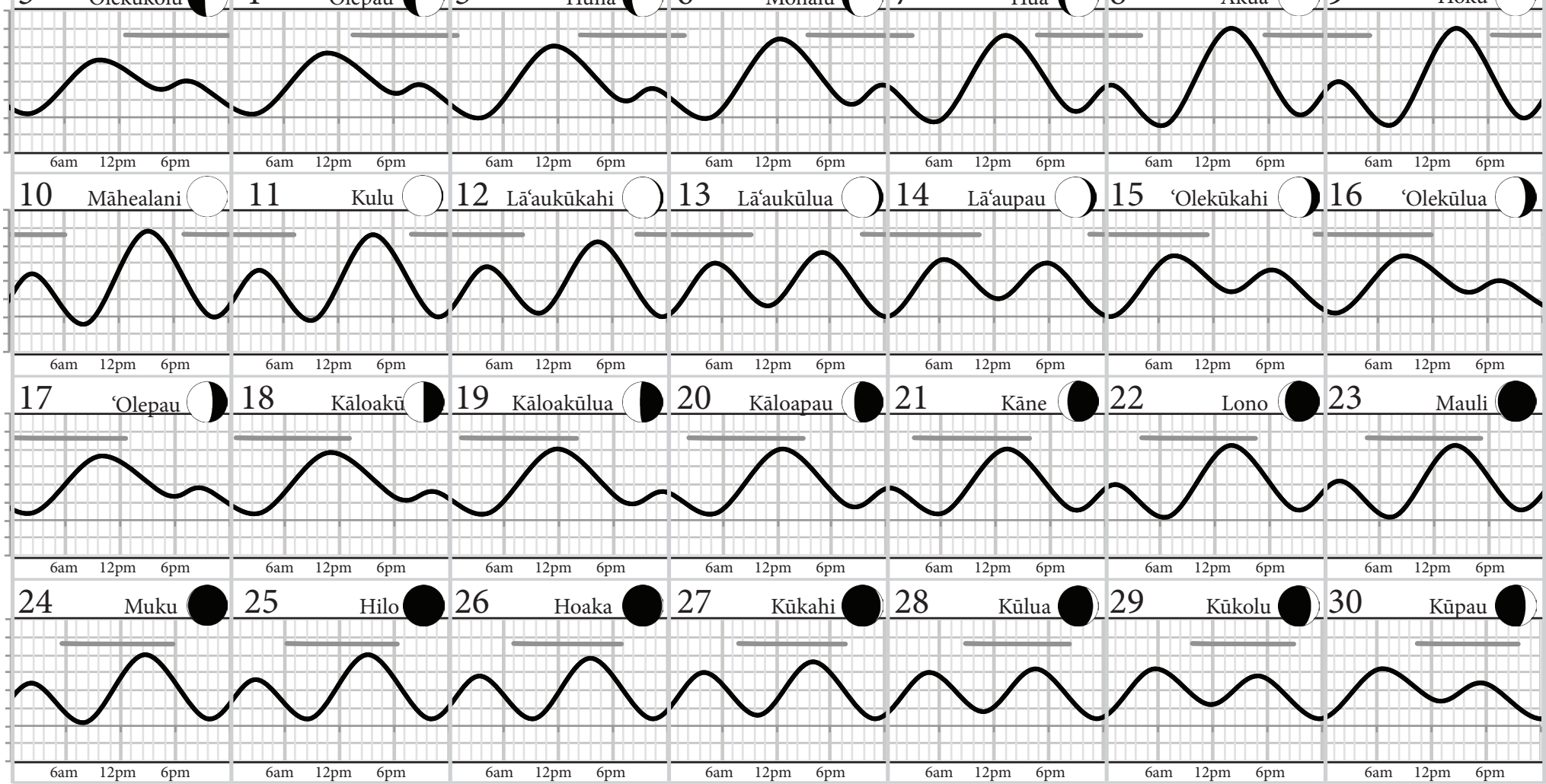
Papa Ulua

January	February	March	April	May	June	July	August	September	October	November	December
							Jul. 26- Aug. 24	*Aug. 25- Sept. 22*			
Nana	Welo	Ikiiki	Ka‘aona	Hinaiā‘ele‘ele	Māhoe Mua	Māhoe Hope	‘Ikuwa	Welehu	Makali‘i	Kā‘elo	Kaulua

ʻIkuwa

August

Lāpule *Sunday*	Pōʻakahi *Monday*	Pōʻalua *Tuesday*	Pōʻakolu *Wednesday*	Pōʻahā *Thursday*	Pōʻalima *Friday*	Pōʻaono *Saturday*
Notes					1 ʻOlekūkahi	2 ʻOlekūlua
3 ʻOlekūkolu	4 ʻOlepau	5 Huna	6 Mōhalu	7 Hua	8 Akua	9 Hoku
10 Māhealani	11 Kulu	12 Lāʻaukūkahi	13 Lāʻaukūlua	14 Lāʻaupau	15 ʻOlekūkahi	16 ʻOlekūlua
17 ʻOlepau	18 Kāloakū	19 Kāloakūlua	20 Kāloapau	21 Kāne	22 Lono	23 Mauli
24 Muku	25 Hilo	26 Hoaka	27 Kūkahi	28 Kūlua	29 Kūkolu	30 Kūpau



Are you prepared for the rain?

Taking care of our Bay begins on land. Steps to reduce runoff pollution from entering the Bay:

1.Do not dump waste water, especially oil and chemicals, into the storm drains. These drains empty directly into the Bay untreated.

2.Reduce pesticide and fertilizer use on your lawn and gardens, especially during the rainy season.

3.Plant a rain garden.
A rain garden is low-lying area that captures run-off from nearby impervious surfaces such as parking lots and rooftops, and allows water to soak into the ground while filtering pollutants (such as oil, grease). Plant roots and microorganisms in the soil capture and break down pollutants, allowing the now cleaned water to recharge groundwater aquifers.

4.Join a Mālama Maunalua Pulama Wai event. Call or check the calendar on the website (www.malamamaunalua.org).

Limited Harvest

Halalū

Moi (15 per day)

Suggested Limited Harvest

U‘u

January	February	March	April	May	June	July	August	September	October	November	December
								Aug. 25- Sept. 22	*Sept. 23- Oct. 22*		
Nana	Welo	Ikiiki	Ka‘aona	Hinaiā‘ele‘ele	Māhoe Mua	Māhoe Hope	‘Ikuwa	Welehu	Makali‘i	Kā‘elo	Kaulua

Welehu

September

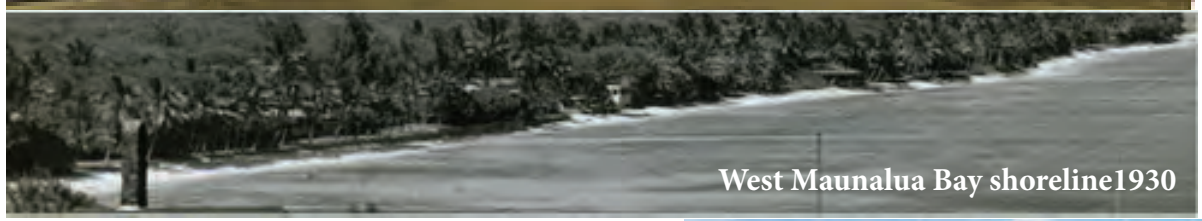
Lāpule *Sunday*	Pōʻakahi *Monday*	Pōʻalua *Tuesday*	Pōʻakolu *Wednesday*	Pōʻahā *Thursday*	Pōʻalima *Friday*	Pōʻaono *Saturday*
31 ʻOlekūkahi	1 ʻOlekūlua	2 ʻOlekūkolu	3 ʻOlepau	4 Huna	5 Mōhalu	6 Hua
7 Akua	8 Hoku	9 Māhealani	10 Kulu	11 Lāʻaukūkahi	12 Lāʻaukūlua	13 Lāʻaupau
14 ʻOlekūkahi	15 ʻOlekūlua	16 ʻOlepau	17 Kāloakūkahi	18 Kāloakūlua	19 Kāloapau	20 Kāne
21 Lono	22 Mauli	23 Hilo	24 Hoaka	25 Kūkahi	26 Kūlua	27 Kūkolu
28 Kūpau	29 ʻOlekūkahi	30 ʻOlekūlua	Notes			

(Each day: tide chart, y-axis 3, 2, 1, 0, -1; x-axis 6am, 12pm, 6pm.)

A Changed Bay

Urbanization has dramatic and long lasting effects on the bay including shoreline erosion, reduced coral cover, and increased sedimentation. All of these effects alter the Bay's coral reef ecosystem.

Lake Maunalua 1921 (present day Maunalua Marina)



West Maunalua Bay shoreline1930

Dr. Robert Richmond, Director of the University of Hawai'i's Kewalo Marine Laboratory, and his team of researchers and students actively explore strategies in restoring the ecosystem of Maunalua Bay.
This research continues to facilitate resource managers in developing more effective and direct restoration strategies.
For more information visit:
http://www.kewalo.hawaii.edu.

Photo: Summer interns (2013), Leilua Watson (left) and Aleka Lyman (right) collect pore water for ecosystem conservation research in Maunalua Bay.

Limited Harvest

Halalū

Moi (15 per day)

Suggested Limited Harvest

'Ō'io

January	February	March	April	May	June	July	August	September	October	November	December
									Sept. 23- Oct. 22	*Oct. 23 -Nov. 21*	
Nana	Welo	Ikiiki	Ka'aona	Hinaiā'ele'ele	Māhoe Mua	Māhoe Hope	'Ikuwa	Welehu	Makali'i	Kā'elo	Kaulua

Makaliʻi

October

Lāpule *Sunday*	Pōʻakahi *Monday*	Pōʻalua *Tuesday*	Pōʻakolu *Wednesday*	Pōʻahā *Thursday*	Pōʻalima *Friday*	Pōʻaono *Saturday*
Notes			1 ʻOlekūkolu	2 ʻOlepau	3 Huna	4 Mōhalu
5 Hua	6 Akua	7 Hoku	8 Māhealani	9 Kulu	10 Lāʻaukūkahi	11 Lāʻaukūlua
12 Lāʻaupau	13 ʻOlekūkahi	14 ʻOlekūlua	15 ʻOlepau	16 Kāloakūkahi	17 Kāloakūlua	18 Kāloapau
19	20	21	22	23	24	25
26	27	28	29	30	31	

ʻŌʻio are Spawning Harvest Wisely to Ensure Future Catches!

ʻŌʻio spawn during the rainy season and usually November through March. Limit harvest during this time to rebuild population numbers for the following years.

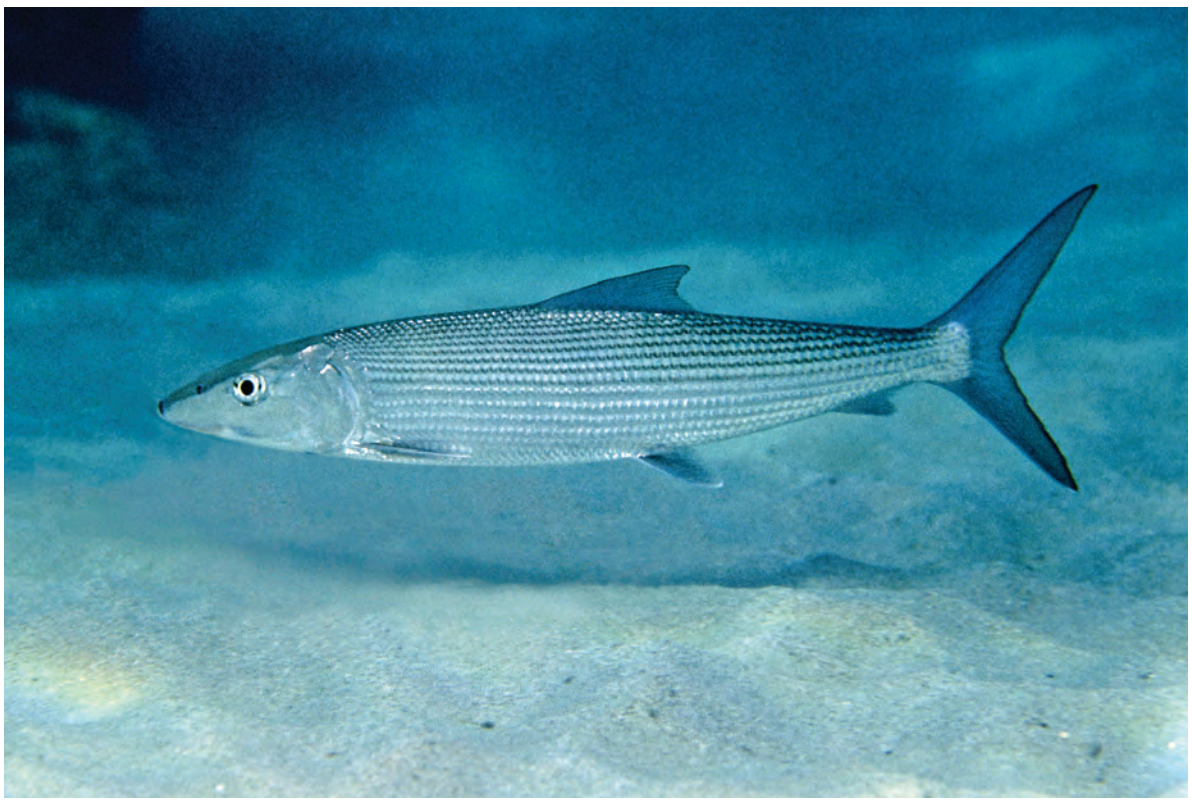


Photo: Keoki Stender

Limited Harvest

Moi (15 per day)

Suggested Limited Harvest

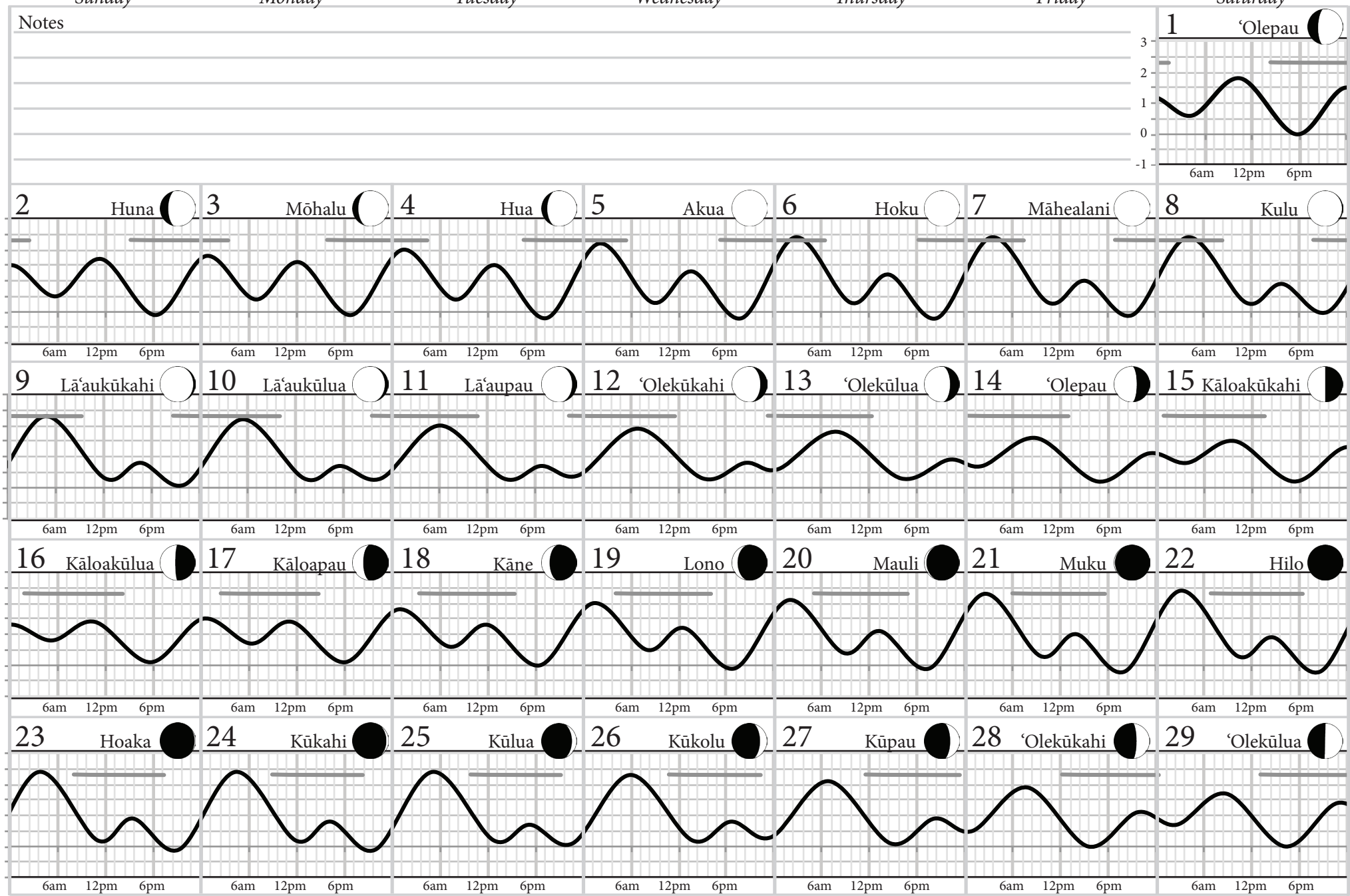
ʻŌʻio

January	February	March	April	May	June	July	August	September	October	November	December
										Oct. 23- Nov. 21	*Nov. 22 - Dec. 20*
Nana	Welo	Ikiiki	Kaʻaona	Hinaiāʻeleʻele	Māhoe Mua	Māhoe Hope	ʻIkuwa	Welehu	Makaliʻi	Kāʻelo	Kaulua

Kāʻelo

November

Lāpule *Sunday*	Pōʻakahi *Monday*	Pōʻalua *Tuesday*	Pōʻakolu *Wednesday*	Pōʻahā *Thursday*	Pōʻalima *Friday*	Pōʻaono *Saturday*
Notes						1 ʻOlepau
2 Huna	3 Mōhalu	4 Hua	5 Akua	6 Hoku	7 Māhealani	8 Kulu
9 Lāʻaukūkahi	10 Lāʻaukūlua	11 Lāʻaupau	12 ʻOlekūkahi	13 ʻOlekūlua	14 ʻOlepau	15 Kāloakūkahi
16 Kāloakūlua	17 Kāloapau	18 Kāne	19 Lono	20 Mauli	21 Muku	22 Hilo
23 Hoaka	24 Kūkahi	25 Kūlua	26 Kūkolu	27 Kūpau	28 ʻOlekūkahi	29 ʻOlekūlua



Harvest Wisely to Ensure Future Catches!

Aholehole peak spawning time in Maunalua Bay is from November through April. Limit harvest during this time to rebuild population numbers for the following years.

Photo: Eva Schemmel

Closed Season

ʻAmaʻama (Mullet)

Limited Harvest

Moi (15 per day)

Suggested Limited Harvest

Āholehole

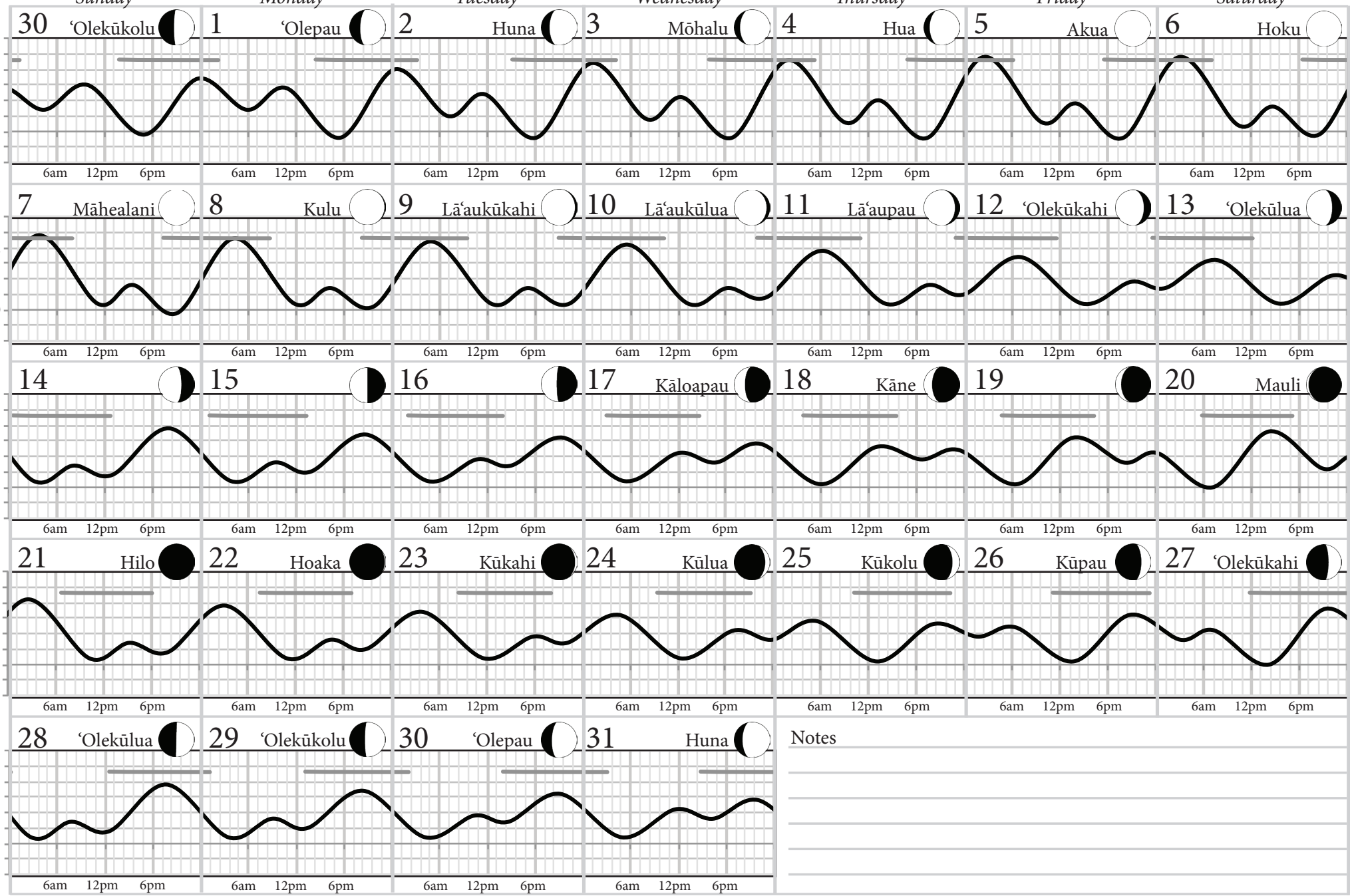
ʻŌʻio

January	February	March	April	May	June	July	August	September	October	November	December
										Nov. 22-Dec. 20	*Dec. 21- Jan 19*
Nana	Welo	Ikiiki	Kaʻaona	Hinaiāʻeleʻele	Māhoe Mua	Māhoe Hope	ʻIkuwa	Welehu	Makaliʻi	Kāʻelo	Kaulua

Kaulua

December

Lāpule *Sunday*	Pōʻakahi *Monday*	Pōʻalua *Tuesday*	Pōʻakolu *Wednesday*	Pōʻahā *Thursday*	Pōʻalima *Friday*	Pōʻaono *Saturday*
30 ʻOlekūkolu	1 ʻOlepau	2 Huna	3 Mōhalu	4 Hua	5 Akua	6 Hoku
7 Māhealani	8 Kulu	9 Lāʻaukūkahi	10 Lāʻaukūlua	11 Lāʻaupau	12 ʻOlekūkahi	13 ʻOlekūlua
14	15	16	17 Kāloapau	18 Kāne	19	20 Mauli
21 Hilo	22 Hoaka	23 Kūkahi	24 Kūlua	25 Kūkolu	26 Kūpau	27 ʻOlekūkahi
28 ʻOlekūlua	29 ʻOlekūkolu	30 ʻOlepau	31 Huna			



Notes

The Maunalua Bay Moon and Tide Calendar was made possible through the following partnerships and supporters. Mahalo!

Conservation International's Hawaii Fish Trust
Mālama Maunalua
Fisheries Ecology Research Lab, University of Hawai'i at Mānoa
Hawaiian Islands Humpback Whale National Marine Sanctuary
Papahānaumokuākea Marine National Monument
Department of Aquatic Resources
NOAA Pacific Islands Regional Office

If you are interested in learning how you can help contribute information to this and other projects, please contact the Mālama Maunalua (malamamaunalua.org) or Spawning Seasons (spawningseasons@gmail.com)

References

HAR 13-95. Hawaii Administrative Rules Title 13 Department of Land and Natural Resources, Subtitle 4 Fisheries, Part V Protected Marine Fisheries Resources, Chapter 95 Rules

Regulating the Taking and Selling of Certain Marine Resources. http://hawaii.gov/dlnr/dar/rules/ch95.pd

Malo, D., and N. B. Emerson. Hawaiian Antiquities. Honolulu: Bishop Museum, 1951.

U.S. Naval Observatory Website, http://aa.usno.navy.mil/data/docs/RS_OneYear.php

NOAA Tides and Currents, http://tidesandcurrents.noaa.gov/tide_predictions.shtml.

got gonads?

NOAA

National Marine Sanctuaries
Hawaiian Islands Humpback Whale

mālama maunalua

CONSERVATION INTERNATIONAL